

this application and the equivalent designs discussed in the text, but it is also intended to cover other equivalents now known to those skilled in the art, or those equivalents which may become known to those skilled in the art in the future.

What is claimed is:

1. A light polymerization device, especially a light polymerization device for polymerizing dental material, comprising:

a housing (12);

a light source (14) mounted within the housing (12) and which emits

polymerizing radiation along an optical axis (76); and

a fan (26) installed in the housing (12) for creating a flow of cooling air

which moves along a path generally transverse to the optical axis (76)

of the light source (14).

2. A light polymerization device according to claim 1, wherein the fan (26) is an axial fan.

3. A light polymerization device according to claim 1, wherein the fan (26) has at least one air intake opening and at least one air exhaust opening (28) each on a respective side substantially opposed to the side on which the other is located, the air exhaust opening (28) including air slots (30).

4. A light polymerization device according to claim 1, wherein the rotational axis of the fan (26) is disposed at an angle of  $60^{\circ}$  to  $90^{\circ}$  relative to the optical axis (76).

5. A light polymerization device according to claim 1, and further comprising a hand grip (20) having a longitudinal axis which extends transversely relative to the rotational axis of the fan (26).

6. A light polymerization device according to claim 5, wherein the angle between the rotational axis of the fan and the longitudinal axis of the hand grip (20) is between  $60^{\circ}$  to  $90^{\circ}$ .

7. A light polymerization device according to claim 1, further comprising a cooling body (40) which is disposed in a selected one of direct heat conducting

connection and indirect heat conducting connection with the light source (14) and which is provided with cooling ribs (46) impacted by the cooling air discharged by the fan (26).

- 5           8.       A light polymerization device according to claim 7, wherein the cooling body (40) has a substantially cylindrical configuration.
9.       A light polymerization device according to claim 8, wherein the cooling ribs (46) extend substantially parallel to the rotational axis of the fan (26).
- 10       10.       A light polymerization device according to claim 7, wherein at least a portion of the fan (26) is received in a receptacle in the cooling body (40).
11.       A light polymerization device according to claim 10, wherein the cooling  
15       body (40) is configured on the back side thereof with end regions between which the fan (26) is received.
12.       A light polymerization device according to claim 7, wherein the cooling air  
20       flow is moved through a flow channel which extends along cooling ribs (46) and the fan (26) is disposed on a selected one of the air intake side and the air discharge side of the cooling ribs (46).
13.       A light polymerization device according to claim 12, wherein a selected one  
25       of a socket (42) of the light source (14) and the light source (14) itself extends into the flow channel.
14.       A light polymerization device according to claim 7, wherein steps (52) are disposed along the cooling ribs (46).
- 30       15.       A light polymerization device according to claim 1, wherein the housing (12) has a part (32) which is releasably mounted with respect to the remainder of the

housing (12), and at least one of an air exhaust outlet (28) and an air intake opening is arranged in the part (32) of the housing (12).

5 16. A light polymerization device according to claim 15, wherein the fan (26) is removable once the removable part (32) of the housing (12) has been removed from the housing (12).

10 17. A light polymerization device according to claim 15, and further comprising a trigger element (34) disposed on the housing (12) by which the connection between the releasable part (32) of the housing (12) and the housing (12) is selectively releasable.

15 18. A light polymerization device according to claim 17, wherein the trigger element is a press button (34).

20 19. A light polymerization device according to claim 1, and further comprising a hand grip (20) relative to which the rotational axis of the fan (26) extends transversely, a plurality of fans (26) arranged along a selected one of the optical axis (76) of the light source (14) and along a longitudinal axis of the hand grip (20), the fans 26 being arranged serially one behind the other and having rotational axes extending substantially parallel to one another, a cooling body (40) formed of one of a single piece and multiple components and extending from one of the light source (14) and a socket (42) in which the light source (14) is mounted to flow channels of the fan (26), and a plurality of cooling ribs (46) extending transversely relative to the  
25 optical axis (76) of the light source (14).